METHOD AND SYSTEM FOR ENHANCED MEDICAL TRIAGE

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims priority to and incorporates by reference in its entirety

5   U.S. Provisional Patent Application No. 60/342,856 entitled, "METHOD AND

SYSTEM FOR ENHANCED MEDICAL TRIAGE," filed December 28, 2001.

BACKGROUND OF THE INVENTION

Field of the Invention

10   The present invention relates to the field of medical triage for health care

plans, and more particularly, to a method and system for automated medical triage in a

workers compensation plan.

Description of the Related Art

15   As is known in the art, medical triage is the act of categorizing or classifying

patients (e.g., ill or injured persons) according to the severity of their health

conditions and thereby determining who need services first. With rising health care

and workers compensation costs, medical triage was designed to maximize and create

the most efficient use of scarce managed care resources in medical personnel, medical

20   facilities, and the like. While medical triage commonly occurs in emergency rooms, it

can occur in other health care settings such as managed care organizations, workers

compensation insurance, health care plans, and health care provider systems to steer

patients away from more costly care and provide more appropriate services. For

instance, medical triage can be used to steer a child with a cold away from an

25   emergency room to preserve the latter for actual medical emergencies. Indeed, these

health care organizations and systems have set up "triage centers" to serve as an

extension of the utilization review process, as diversions from emergency room care,

or as case management resources.

In the current medical triage environment for a managed care program, such as workers compensation (WC), a work injury claim is first called in from an employer of the injured worker (IW) to a telephone reporting center of a workers compensation insurance carrier or health care plan provider. The health and/or workers

5   compensation insurance or care provider may have one or more telephone reporting centers handling the initial claim reportings. The telephone reporting center then performs logistic data collection and entry of information relating to the claim, such as the name of the injured person/worker, social security number of the worker, the employer's address and plant location of the accident and description of the accident.

10   The collected claim information relating to the injured worker and the accident is then transferred out of the telephone reporting center to a local claim service center, (also known as an adjusting field office or AFO) via a claim management system (e.g., T-MATE of Travelers), wherein the AFO is a triage center of the health and/or workers compensation insurance or health plan provider. As with the telephone reporting

15   center, there may be more than one local claim service center.

At the local claim service center, a case or claim handler is assigned to the claim. Part of the normal case set up of the case handler is to review the basic facts from the collected claim information and contact the injured worker to obtain additional facts and the injured worker's description of the accident. The case handler

20   also contacts the employer to verify the information originally obtained by the telephone reporting center from the employer. Additionally, if a physician had provided medical care to the injured worker, the case handler also seeks out the physician to obtain the physician's diagnosis or prognosis of the injured worker and his/her injury. After completing the aforementioned inquiries, the case handler

25   documents the additional facts along with the originally collected claim information, and sends via a system interface, to a medical case manager (MCM). The MCM's task is to review the set of facts and – based on his/her professional opinion as an MCM – determine whether the return-to-work (RTW) time for the injured worker can

2

be impacted. For instance, if the injured worker is to be out for 30 days, can he/she return to work earlier (e.g., in 20 days) if additional medical attention is given; or if the RTW time is 19 days, can he/she come back in 14 days. There are certain instances where the RTW time cannot be impacted, such as when the injured worker

5   was already back at work after the accident and when the worker suffered a fatal injury in the accident. If the MCM judges that the RTW time will not be impacted, the MCM will document a non-referral into the nurse's integrated case management system (ICMS). However, if the MCM judges that the RTW time can be impacted, the MCM will open a medical referral and assignment for the injured worker in

10   ICMS. The assigned nurse will then co-manage the claim with the claims adjuster (i.e., MCM), and work with the appropriate physicians to provide the necessary medical attention and treatment plan to expedite the recuperation of the injured worker and shorten the RTW time. This is because for workers compensation, it is the workers compensation carrier, or self-insured employer, that pays for the medical

15   treatment of the injured worker along with the indemnity payment (i.e., wage replacement) to the injured worker while he/she is not able to work. Thus, it is in the interest of the workers compensation carrier to accelerate and pay a little more on the medical treatment and impact the RTW time of the injured worker in order to cut down on the higher cost of indemnity payment.

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BRIEF SUMMARY OF THE INVENTION

There are a number of problems associated with the current medical triage environment. Firstly, it requires the claims routing from T-MATE to ICMS to be "triaged" by the medical unit and its MCMs. The triage process required a review of

25   the medical protocols and assignment by a MCM if lost time is expected to exceed a predetermined amount of time, e.g., 14 days. Because all medical referrals are triaged to determine if medical assignment is warranted in the current ICMS/medical assignment process, it has been found that, on average, a large percentage (48%) of

the claims sent to the ICMS were assigned for medical management. It also has been found that there were wide disparities at the AFO level in the medical referrals and assignments sent to the ICMS. For instance, there was a wide variance of assignment percentage and inconsistent application of assignment procedures, wherein

5   assignments by diagnosis and severity of injury vary by office, and a significant number of inappropriate referrals were sent to the ICMS. This is despite the fact that the MCMs are given criteria for medical referrals, such as those shown in *Appendix A*. Secondly, because an MCM's decision of nurse assignment is based partly on his/her individual experience on the job, turn-overs of MCMs further add to the

10   disparities in the medical triage process. New MCMs with little or different knowledge will have different decisions on medical referrals from those of the more experienced MCMs. Thirdly, there is a huge operational cost in retaining MCMs, whose jobs are solely to determine whether a nurse can add value to workers compensation claims; thus, each office has costly medical resource allocated to the

15   triage function.

Therefore, there exists a need for a method and system for enhanced medical triage in managed care plans, such as workers compensation, that streamlines the triage process and referral logic and sends only those claims to the ICMS that require medical intervention, e.g., by a nurse, thereby changing from an ICMS "triage roster"

20   to an "assignment roster" (ICMS roster). Because each employer has unique claims that need to be properly managed when there is a major impact on medical management, there also exists a need for a method and system for enhanced medical triage that match claims to the right resources at the right time.

Accordingly, the preferred embodiments of the present invention provide a

25   method and system for an enhanced medical triage that provides focused medical intervention, reduces the time needed to review lost time cases, lessens the number of unnecessary referrals or re-referrals, and further tailor the assignment process to

4

medical personnel, such as nurses, based on specific market and/or employer dedication.

The preferred embodiments of the present invention also provide a method and system for an automated medical assignment process that eliminates the need to

5   "triage" and assign claims based on anticipated disability timeframes, and only those claims meeting the medical assignment logic, or manually referred claims, can be routed to the ICMS "assignment roster" for medical assignment.

The preferred embodiments of the present invention also provide a method and system that implements sophisticated referral logic and professional skills for

10   managing health care and/or workers compensation claims to the best outcome.

The preferred embodiments of the present invention further provide a method and system for an automated medical triage through system identification of claims requiring medical management.

The preferred embodiments of the present invention additionally provide a

15   method and system for gathering the collective experience of triage personnel, establishing consistent assignment of selected injury types with high severity and/or potential for impact by a nurse, reducing or eliminating the staff resources required to triage claims, and developing improved claim data collection for future analysis.

Additional aspects and novel features of the invention will be set forth in part

20   in the description that follows, and in part will become more apparent to those skilled in the art upon examination of the present disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

The preferred embodiments are illustrated by way of example and not limited

25   in the following figures, in which:

Fig. 1 depicts the enhanced medical triage workflow logic in accordance with one embodiment of the present invention;

Fig. 2 depicts a sample screen used for collecting/mining the data elements necessary for the medical assignment logic in accordance with an embodiment of the present invention;

Fig. 3 depicts data mining results as viewed with the NCCI NOI/POB codes

5   match; and

Fig. 4 depicts the existing system environment and the new system environment additions for implementing the enhanced medical triage in accordance to one embodiment of the present invention;

10   DETAILED DESCRIPTION OF THE INVENTION

Acronyms

	AFO	Adjusting Field Office
	APV	Average Paid Value
	CAT	Catastrophic claim/severe injury
15	CB	Claim Benefit
	CM	Claim Medical
	CM-Plus	Claim Medical-Plus (medical involvement)
	ICD-9	International Classification of Diseases, Ninth Revision
	MIRA	Micro Insurance Reserve Analysis
20	NCCI	National Council on Compensation Insurance
	NOA	Nature of Accident
	NOI	Nature of Injury
	NOL	Notice of Loss
	POB	Part of Body
25	SAC	Special Account Communication
	TT	Temporary Total disability
	TP	Temporary Partial disability

6

Reference is now made in detail to an embodiment of the present invention, an illustrative example of which is illustrated in the accompanying illustrations, showing a method and system for enhanced medical triage that automates and streamlines the medical triage process. Fig. 1 shows the enhanced medical triage, i.e., medical

5   referral/assignment, workflow logic in accordance with the preferred embodiments of the present invention. The enhanced medical triage includes both automated and manual medical referrals/assignments, as will be explained later. The goals and benefits to the streamlined medical assignment logic of the present invention include: 1) early medical intervention; 2) reduction in the amount of time required to review

10   the ICMS roster; 3) reduction in the amount of unnecessary referrals to the ICMS roster; 4) improved consistency in the medical assignment of those claims that will benefit from medical intervention, such as assignment based on potential severity and ability to reduce lost time days; 5) ability of claim handlers to send manual referrals to medical assignment (i.e., manual medical referral/assignment); 6) system

15   documentation of referral objectives for all medical assignments; 7) addition of medical assignment and closure measurements which allow future enhancements to the process; and 8) a re-write and clarification of SAC instructions impacting the medical assignment process, and need for pre-approval of certain services – thus allowing the host insurance carrier or health care plan provider to meet customer

20   specific requests for medical assignment, such as the selection of an outside medical vendor. The current ICMS/medical referral and assignment process include the common triage/assignment decision points shown in *Appendix A* and the following settings:

- All lost time/CB claims are automatically sent to the ICMS roster for triage
25   when claim compensability is accepted;
- A review of all CB claims by the medical team (i.e., the medical team "triaged" the claims) to determine if medical assignment will favorably impact the claim outcome by reviewing claim notes, injury type, and anticipated lost

work time in excess of a predetermined period of time (e.g., RTW time > 14 days);

• Early intervention by the MCM; and

• Re-referral of a claim by the claim handler, when there is a new disability period, when further medical services are warranted.

The present invention uses much of the above same initial logic that is in the current ICMS/medical referral and assignment process, and builds upon such logic for an enhanced medical triage workflow by preventing non-covered & controverted claims from referring to ICMS. Thus, Fig. 1 shows that steps 1-3 are similar to the current process. At step 1, a new claim notice is reported to a local claim service center (AFO) from a telephone reporting system via a claim management system, such as T-MATE. Although the name "T-MATE" is used throughout the disclosure, it should be understood that any claim management system with equivalent functionality to T-MATE can be used in its place. At step 2, the claim is reviewed and assigned to a claim handling unit, with one or more claim handlers, to investigate and/or manage the claim. At step 3, the claim handler assigned to the claim performs the normal case set up as discussed earlier and collects claim related information such as coverage, compensability, loss designator (e.g., as a CM or CB claim), and lost time information. This information is then used as input to the medical referral/assignment logic of the present invention, as shown in step 4. The formulation of this medical referral/assignment logic is described next.

According to preferred embodiments of the present invention, the T-MATE to ICMS referral & re-referral logic of the current ICMS/medical referral and assignment process is reviewed by soliciting feedback from all medical team leaders in the local claim service centers (AFOs) as to: a) current methods of claim evaluation to determine medical assignment; and b) SAC instructions that impact the medical assignment decisions. Additionally, a complete analysis is done on medical claims (e.g., workers compensation claims) currently being referred and assigned for medical

management and claims non-intervened for medical assignment. This includes: a) finalizing a list of AFOs/service centers to pull data on assignments; b) finalizing a list of data elements that will be captured from the list of AFOs for data mining; c) setting up and completing code to capture the data elements; and d) completing a review of

5   test files for data mining. The AFOs are chosen and finalized based on their claim volume and their current practice of adhering to the conventional manual medical triage process described earlier. Data elements are chosen and finalized based on current, reliable data fields captured in T-MATE that are considered to have an impact on determining medical assignment. Further detailed review included financials

10   (APV, medical and indemnity incurreds), NCCI code combinations, ICD-9 data of assigned and non-assigned claims, anticipated surgery indicator, lost time days, and data mining to determine when certain data elements are populated. The list of data elements for mining includes but is not limited to those shown in *Appendix B*, with some of the data elements representing a grouping of data. Fig. 2 shows a sample

15   screen used for collecting/mining the data elements. Fig. 3 shows an example of the data mining results of NOI. *Appendix C* shows an example of the data mining results, where the "average" column denotes the number of days to completion of the data field, the "count" column denotes the claim count, and the "percent" column denotes the percentage of claim files with data field populated.

20   Based on the data mining results, it is determined that injury codes alone do not drive the medical assignment/referral decision. It is often the injury plus any red flag factors such as those listed in *Appendix A*. Accordingly, a streamlined medical referral and assignment logic is developed based on factors that most significantly impact the claim assignment to medical care. These factors are in turn based on a

25   combination of the data mining results and the actuarial/financial/manual analysis described above. All of these factors may be considered for initial referrals and re-referrals, and they include:

A) A combination of selected NCCI codes to include both NOI and POB, a list of which is shown in *Appendix D*. Refer/re-refer when the claim matches one of the selected NCCI NOI/POB codes. ICMS will then display a referral objective as shown in Table 2.

5   B) Refer/re-refer when the "anticipated surgery" indicator has a value of A (anticipated), P (performed), or B (both anticipated & performed). ICMS will then display a referral objective as shown in Table 2.

C) Refer/re-refer when there is a new date which disability began as entered by the claim handler. ICMS will then display a referral objective as shown in Table 2.

10   D) Refer/re-refer a claim when actual lost time exceeds a predetermined period of time, e.g., 14 days (i.e., initial lost days). ICMS will then display a referral objective as shown in Table 2. All claims are included, not just the selected NOI/POB codes shown in *Appendix D*. One time event – only refer/re-refer once. Here, the claim handler and/or the MCM completes the RTW date and qualifier as soon as the

15   injured worker (IW) returns to work to avoid unnecessary referrals to ICMS.

E) Refer/re-refer when the sum of the TT incurred, TP incurred, and medical incurred values (i.e., total cost of all three) is greater than a predetermined amount of money, e.g., $20,000, and there is an open disability. TT denotes temporary total disability, wherein the IW is totally disabled from work temporarily; TP denotes

20   temporary partial disability, wherein the IW is partially disabled from work temporarily, i.e., the IW cannot perform his/her job fully but can perform some form of work. In other words, a referral/re-referral will occur each time that the claim incurreds are greater than $20,000. ICMS will then display a referral objective as shown in Table 2.

25   F) Refer/re-refer if a selected ICD-9 code or early strategic intervention (ESI) ICD-9 code is processed through the medical bill re-pricing system in which all medical bills are input for payment and possible re-adjustment of payment due to state fee schedule or negotiated network rates. In other words, referral/re-referral logic will

look at all of ICD-9 codes stored (primary, plus most recent codes stored) and create a referral/re-referral if any of the stored codes match the selected or ESI codes. The ICD-9 logic includes two distinct groups of ICD-9 codes that may run through the ICMS referral/re-referral logic to create an automated referral. Thus, the referral/re-referral occurs when there is a change of ICD-9 code that matches the criteria of the ICD-9 codes in these two distinct groups, which are:

1. ICD-9 codes that are associated with potential ESI claims (ESI ICD-9 codes), as shown in Table 1; and

2. ICD-9 codes which identify claims with significant medical issues that require medical intervention (selected ICD-9 codes), a sample list of which is shown in *Appendix E*.

Table 1

ESI Diagnosis	ICD-9 Code
RSD	337.9
Multiple Sclerosis	340
Thoracic Outlet Syndrome	353.0
Psychiatric Disorder	300.9
Substance Abuse: ETOH	305
Substance Abuse: Drugs	305.9
Chronic Pain	729.5
Post Traumatic Stress Disorder	309.89
Organ Transplant – V Code	V43 (996.8 complication of transplanted organ)
Toxic Exposure	980 – 987 depending upon type of substance
Electrocution	994.8
Post Concussion Syndrome	310.2/850.9
Failed or multiple back surgeries	724.9
Rape/Assault	959.9

11

For the first distinct group, i.e., the ESI ICD-9 codes, there may be an automated ICMS medical assignment/referral of the claim when the ICD-9 code of the claim matches the ESI ICD-9 codes used by the major case unit (MCU). The MCU is

5   a dedicated unit of technical experts whose primary function is to handle catastrophic and large loss claims. Additionally, a referral objective may be displayed in ICMS as shown in Table 2. Consequently, a discussion may take place between the claim handler and the MCM to determine the ESI eligibility and referral to the MCU. For the second distinct group, i.e., the selected ICD-9 codes, an automated ICMS

10   assignment will occur when the ICD-9 code of the claim matches one of the selected ICD-9. Again, a referral objective may then be displayed in ICMS as shown in Table 2.

If the claim factors match more than one automated assignment triggers or claim factors above, each trigger creating the automated assignment can be displayed.

15   For example, if lost time exceeds a predetermined time frame, e.g., 14 days, and the anticipated surgery indicator is present, both referral objectives will be listed. As mentioned earlier, Table 2 shows the automated assignment/referral and re-referral objectives that can be displayed, individually or jointly, in the ICMS.

Table 2

Referral Logic	Referral Objective To Be Displayed
NOI/POB code combination met	"Nature of Injury/Part of Body description meets medical assignment criteria"
Anticipated/performed surgery (A/P/B)	"Surgery is anticipated or has been performed, please assign"
Lost time exceeds14 days	"Patient has not RTW in over 14 days"
TT, TP and Medical Incurred total exceeds $20,000	"The total TT, TP & medical incurreds exceed $20,000"
a. Selected ICD-9 codes b. ESI ICD-9 codes	a. "The current ICD-9 diagnosis meets medical assignment criteria" b. "Claims falls within ESI criteria, please evaluate for medical assignment and referral

	to MCU"
New date disability began	"Patient has begun a new disability period"

According to an embodiment of the present invention, the medical referral logic of step 4 in Fig. 1 includes claim factors that can prevent an automated assignment to ICMS, and they include: 1) claim is closed in T-MATE; 2) policy coverage = N (none) or U (unknown); 3) controverted indicated = Yes; 4) date of death is populated; 5) there is already an open ICMS referral; 6) the policy is an opted out account; 7) there is a prior carrier policy or excess carrier file; 8) the IW returned to work full duty, or the IW will never RTW; and 9) bypass some controlling offices, i.e., those customer-dedicated offices that have chosen to bypass and not use the medical program of the host insurance carrier or health care plan provider. When the aforementioned claim factors or data fields exist, a negative answer results from step 8, and an automated ICMS assignment will be blocked and the system referral is not sent in step 7. However, a manual medical referral may still be sent by the claim handler in step 6 in some circumstances as a result of the claim handler recognizing the need for medical assignment in step 5. For instance, a customer who may normally use the medical program of the host insurance carrier may request an assignment on a case-by-case basis (usually for serious injuries).

According to an embodiment of the present invention, an automated medical assignment/referral can be prevented – despite the fact that the claim data matches the medical assignment/referral logic in step 8 of Fig. 1, and a generated medical referral is sent to the ICMS roster – if there exists one of previous non-intervened milestones. All claims displayed on the ICMS roster at step 9 will take one of two paths: a) assignment to a MCM; or b) non-intervention. For MCM assignment, if all claim factors are updated in T-MATE as claim facts change, and the claim requires medical management, the MCM will complete the case assigned/case received and sent activity and assign the claim to a nurse in step 11. The "case assigned" activity: 1) is

used to create a diary for the medical personnel, e.g., a nurse, to whom the claim is assigned; 2) is marked completed with the result code "case received" by the nurse to whom the claim is assigned, which creates the referral-opened-by-medical milestone; 3) is not used when a claim is non-intervened; and 4) is not used for the sole purpose

5 of removing a claim from the ICMS roster. The "sent" activity happens when the nurse sends the claim activity to T-MATE to become part of the claim notes.

If the SAC instructions require pre-approval prior to managing the claims, the dedicated MCM to the account should seek pre-approval from the customer, prior to completing the case assigned/case received activity. To further streamline the

10 assignment process, nurses can be designated to specific market, employer-dedicated claim units, and/or alpha-split claim units to allow them to remove their own claims from the ICMS roster. Alpha split claim units are those tasked with assigning claim notices to the claim handlers based on alphabetical split of the customer name; for example, one claim handler or adjuster may manage customers with first letter A to G

15 in their names. According to the present invention, the ICMS will not automatically create assignments directly to individual nurses.

For non-intervention of a claim sent to the ICMS roster, there are three distinct reasons such claim may be non-intervened, i.e., three non-intervened milestones:

1. The claim does not meet medical assignment criteria in step 12, when

20 reviewed by the MCM in step 10. Here, a result code of "Non-intervene, does not meet criteria" will display in ICMS. The MCM can also add a note with the specific rationale as to why the claim does not require medical assignment. This will allow for future analysis and enhancements to the assignment logic. For instance, a claim may have met the referral

25 logic because the claim data was not updated, where it appeared that there was an open disability, but the injured employee had returned to work; or the claim met the referral logic but the severity was very low, such as the

surgery performed was to suture a cut hand and there was minimal time loss for work.

2. SAC instructions indicate that the customer does not want medical management assigned. Here, a result code of "Non-intervene per customer request" will display in ICMS.

3. Claim is a CAT and MCU has assigned an external resource. Here, a result code of "Non-intervene CAT" will display in ICMS.

If one of the aforementioned non-intervened milestones exists, the claim is not assigned to a nurse to manage, as shown in step 13. T-MATE claim data is then updated as claim facts change, as shown in step 14, and the workflow is started at step 8 again.

As noted in the goals and benefits of the enhanced medical triage of the present invention, manual medical referrals are retained for the claim handlers, as shown in steps 5 and 6 of Fig. 1. In other words, claim handlers maintain the ability to manually refer a claim to ICMS that does not meet the automated assignment logic, and requires medical intervention. As with the automated medical referral/assignment, the claim is reviewed by the MCM at step 10 to determine whether the claim meets the assignment criteria, and the workflow of Fig. 1 continues as mentioned earlier with regard to steps 11-14. Claims sent manually by the claim handlers at steps 5 and 6 may include CM claims and CB claims. *Appendix G* shows a table detailing the key data elements to manually determine medical assignment.

The medical claim assignments found on the ICMS roster include CB claims, CM-Plus claims, and CM claims. The CB claims include claims that meet the automated assignment logic & claims that are manually sent by the claim handler through the T-MATE Medical referral screen process. The CM-Plus claims are those CM claims that are identified as potentially requiring medical management, due to the type injury and/or treatment, and include those claims that meet the CM-Plus referral logic and the customer has elected to use the CM-Plus product. The CM-Plus referral

logic includes repetitive trauma, carpal tunnel, knee injuries, and back injuries with ongoing physical therapy or chiropractic treatment. CM-Plus claims may require review and an assignment decision because the assigned medical personnel, such as an assigned nurse, may need to review for the potential to positively impact the claim

5   outcome due to the medical management charge to the claim file. The review often requires the nurse to contact the treating physician to determine the medical status of the IW. CM claims include only those claims that are manually sent by the claim handler through the T-MATE Medical referral screen process.

In order to maintain the early intervention and quick turnaround of medical

10   assignments, one person per service center may be designated to review the ICMS roster periodically at a predetermined interval, e.g., daily, to be sure all claims, either assigned or non-intervened, are periodically removed. As mentioned earlier, all claims sent to ICMS through the automated assignment logic and through the manual medical referral screen process will list a referral objective and be displayed in ICMS

15   in the "Claim Rep Notes" on the Event screen. *Appendix F* shows the notes that will display in T-MATE when a medical referral is created. These notes will also display in ICMS in the "Claim Rep Notes" on the Event screen.

As part of the continual improvement process, the enhanced medical triage and assignment process is reviewed to assure consistency of assignments from office

20   (AFO) to office by injury type, severity of injury, and potential medical impact. In addition, the goal is to continually decrease the number of unnecessary referrals sent to the medical unit for review, thus increasing efficiency of the medical assignment process. Part of the improvement process is the use of management information reports that are generated based on "milestones" which are created when certain

25   system activities take place. Milestones include: referral (assignment) and closures (non-intervened). These milestones is used to report statistics on AFO acceptance of claims for medical management. Table 3 shows the Referral Type Milestones that are created in T-MATE when various types of referrals are made to ICMS.

Table 3 - Referral Type Milestones

Milestone	Description
Auto referral to Medical	Standard Automated Referral
14-day Auto referral to Medical	Automated Referral when no return to work within 14 days
New Disability Auto referral to Medical	Automated Referral when new Date Disability Began is entered
Manual Referral to Medical	Manual Medical Referral
Nurse Referral to Medical	Nurse opens claim in ICMS and T-MATE sends back a referral

Table 4 shows the referral-opened-by medical milestone, which is created in T-MATE when "case assigned"/"case received" is completed in ICMS.

Table 4 – Referral-Opened-by-Medical Milestone

Milestone	Description
Referral opened by medical {Case Assigned / Case Received}	Referral has been accepted for Medical Management.

Table 5 shows the non-intervened milestones that are created in T-MATE when specific result codes noted below are used with the activity "Cease Activity" in ICMS. Non-intervened result codes are not appropriate when closing a claim after medical management has been initiated. Closure codes such as "Adjuster Requests Closure" are more appropriate when the claim has been initially managed and then requires closure.

Table 5 - Non-intervened Milestones

Milestone	Description
Non-intervened by Medical – Does not meet criteria {cease activity / non-intervene – does not meet criteria}	Non-intervened by Medical as claim would not benefit from medical intervention.
Non-intervened by Medical per Customer Request {cease activity / non-intervene – per customer request}	Non-intervened by medical on this specific claim as requested by customer
non-intervened by medical – CAT {cease	Non-intervened – catastrophic claim

activity / non-intervene CAT}	which MCU will manage

Additionally, the referral objectives for both automated and manual referrals are reviewed to determine if the claim requires ongoing medical case management, or utilization review/pre-certification only. The manual referral displays the *primary*

5   *service requested* which includes telephonic case management, UR only, or on-site medical or vocational. The referral will also indicate an UM or surgical referral if the referral includes a current treatment request. Ongoing medical management, rather than pre-cert/UR only is considered any time there is ongoing lost time and/or medical treatment. This includes manual and automated referrals.

10   Fig. 4 shows the existing system environment (top part of the figure) for the current medical referral/assignment process and the new system environment additions (bottom part of the figure) to implement the enhanced medical triage of the present invention. The PICM Auto Medical Assignment driver is a traffic router and a driver for the automated medical assignment system process. It is initiated first,

15   filters through preliminary edits, and initiates other components that conduct more detailed and specialized functions. The components initiated by the PICM return control back to the PICM and provide a return message. The PICM then interrogates the message to determine the appropriate next step to conduct for the entire process. The Referral/Re-referral is one of the components initiated by the PICM. It performs

20   all of the triage/assignment edits that have been stored in various data stores. Its basic functions is to determine if a claim needs to be sent to medical either for the first time or as a re-referral. This decision point is triggered when a triage/assignment edit exists. Once a decision is made, it returns control to the PICM driver component and passes a return

25   message. The MedRef Process component is another component initiated by the PICM for two functions: 1) whenever a new referral or a re-ferral is required to by processed; and 2) whenever the system must determine if data has changed

in the WC claim system that needs to be propagated into the medical system, so that both system can be in sync with its data. Once processing is complete it returns control to the PICM driver component and passes a return message. The Data Reformatter process component is also initiated by the PICM, and its function is to

5   format a referral/re-referral message or a data update message to be sent to the medical system. It also reads the data stores, gathers the data, builds a message to conform to a specified layout, and places this message onto the ICMS queue component. The data from the ICMS queue is then forwarded via an existing hourly ICMS process to a medical vendor, such as Intracorp, for processing of the claims.

10   In summary, the enhanced medical triage of the present invention maintains early intervention by the system review of referrals, in addition to creating assignment logic to send only those claims to medical review that require medical intervention. The enhanced medical triage is based on a detailed study of claim data elements, actuarial study, and predictive modeling was reviewed and modeled after the medical

15   supervisor review process. The benefits to this approach are to improve consistency and quality of medical assignments from office to office, and to reduce the unnecessary referrals to ICMS. In addition, the claim handler maintains the ability to manually assign a claim to the medical unit at any time. Furthermore, with turn-overs of claim personnel, inconsistent claim handling and referrals may arise with new

20   claim personnel coming into the job with different opinions and/or different sets of experience. The enhanced medical triage of the present invention allows the new claim personnel to build the body of knowledge of previous personnel, instead of having to start over and provides more consistency between personnel, between offices, and between jurisdictions (because health care plans such as workers

25   compensation plans are state-driven and statutory-driven). Employers will benefit from reduced claim costs, early intervention by claim handlers, and consistency of medical case assignment. This puts the employer in the position where selected lost

time claims that have the potential for the greatest medical impact are assigned automatically once compensibility is established.

Although the invention has been described with reference to these preferred embodiments, other embodiments could be made by those in the art to achieve the

5　same or similar results. Variations and modifications of the present invention will be apparent to one skilled in the art based on this disclosure, and the present invention encompasses all such modifications and equivalents.

Appendix A – Common Triage/Assignments Decision Points Utilized in Today's

10　ICMS Environment

1. Date of Injury (DOI) → If DOI already exceeds a predetermined period of time, e.g., 14 days, immediate medical assignment should be made.
2. Special Account Communication (SAC) instruction review → Follow customer request from SAC instructions for medical assignment (SAC instructions refer to

15　customer-specific service requirements that the claim professional must meet in handling the claim). For accounts with SACs related to medical assignment pre-approval, up to 50% of the triage time is related to SAC compliance.
3. Diagnosis/ICD-9 (if available) → The following diagnoses are medically assigned the majority of the time (can also be derived from NCCI injury and body part

20　codes):
   - Backs
   - Necks/disc involvement
   - Shoulder/rotator cuffs
   - Knee injuries

25
   - Repetitive injuries
   - Hernia – 50% assignment;
   Wherein ICD-9 refers to the International Classification of Diseases, Ninth Revision; and NCCI refers to the National Council on Compensation Insurance.

30　4. History of prior injury and pre-existing conditions.
5. Work status → If out of work (OOW), then assign; if modified work duty, then 50% assignment.
6. Type of ICMS referral → If manual by adjuster, then assign; If automated to ICMS, then perform triage.

35　7. All claims where surgery is anticipated.

8. When there is a request for medical services, for all therapy, diagnostics, DME, etc.

9. Red flags present, e.g., no follow up doctor visit and OOW, multiple claim history, out of network provider, injured worker (IW) in need of physician referral.

5   10. Description of IW's job (e.g., heavy, repetitive)

11. If modified duty is available, and if RN can assist in identifying modified duty.

12. Disability duration, as outlined in medical protocols (limited use).

Appendix B – Data Elements for Mining

10 • CARR market code (or any market code)
    • ICMS referral date
    • ICMS manual (MedRef) indicator
    • ICMS assignment date
    • Job class code
15 • Job hazard index code
    • Loss designator
    • Loss designator level indicator
    • Second injury indicator
    • Education level
20 • Work level (i.e., heavy, light, sedentary)
    • Light work available (Y/N)
    • Occupational risk indicator (i.e., Char(1); L – light; M – medium; H – heavy, blank)
    • Probability of permanent injury (i.e., Char(1); L – low; M – medium; H – high; N
25   – none; blank)
    • Controverted indicator
    • MIRA factors
    • Selected system data items:
        1.   AFO code
30   2.   Claim number
        3.   Adjusting state
        4.   Date of NOL (Notice of Loss)
        5.   SIC code (Standard Industry Classification)
        6.   Employee Sex
35   7.   Initial treatment code
        8.   Full/Part time indicator
        9.   Date of birth
        10.   Injured worker type
        11.   Wok days per week

21

12. Average weekly wage
13. Overtime indicator
14. Date of hire
15. Length of employment – years
5   16. Accident date
17. Date reported to employer
18. Lost time indicator
19. Return to work indicator
20. Return to work date
10   21. Fatality indicator
22. Date of death
23. Last day worked
24. Cause code
25. Part of body (POB) code
15   26. Nature of injury (POI) code
27. Previous injury indicator
28. First aid indicator
29. Hospital indicator
30. Physician indicator
20   31. Ambulance indicator
32. First Aid date
33. Hospital first date of treatment
34. Hospital length of stay
35. Physician First date of treatment
25   36. Physician's specialty.

Appendix C – Data Mining Results and Data Integrity

Variable	All Claims	Average	Count	Percent (%)
	Days_NOL	28.38	6570	
1	T_NOL_Date	1.0	6570	100
2	T_Adj_State	1.0	6570	100
3	T_Cov_Ver_Ind	1.0	6570	100
4	T_First_Aid_Ind	1.0	814	12
5	T_Hosp_Ind	1.0	4537	69
6	T_Phys_Ind	1.0	1454	22
7	T_Work_Days_Week	1.01	6570	100
8	T_DOL	1.02	6570	100
9	T_Part_Body	1.03	6569	100
10	T_Gender	1.03	6569	100
11	T_Cause_Injury	1.03	6570	100

12	T_Reg_Work_Status	1.04	6192	94
13	T_Nature_Injury	1.05	6570	100
14	T_Initial_Treat_Code	1.10	5794	88
15	T_Rept_Employer_Date	1.10	6567	100
16	T_Claimant_Zip	1.17	6516	99
17	T_DOB	1.32	6349	97
18	T_Policy_Num	1.33	6463	98
19	T_CARR_Market	1.42	6393	97
20	T_Hire_Date	1.42	5632	86
21	T_Sailor_Acct_Num	1.43	5175	79
22	T_Lost_Time_Ind	1.47	5820	89
23	T_Prev_Injury_Ind	1.75	6310	96
24	T_Loss_Des	1.99	6570	100
25	T_Subro_Flag	3.46	6401	97
26	T_Ret_Work_Ind	3.47	5686	87
27	T_Cum_Trauma_Ind	3.61	6399	97
28	T_AWW	4.08	5783	88
29	T_Last_Day_Worked	4.25	3620	55
30	T_Level_Ind	4.89	5433	83
31	T_Cat_Code	4.91	573	9
32	T_Salary_Cont	5.14	5514	84
33	T_Cat_Ind	5.18	5463	83
34	T_Educ_Level	5.77	371	6
35	T_Contro_Ind	6.32	4936	75
36	T_ICMS_Ref_Date	6.63	3573	54
37	T_Light_Work_Avail_Ind	6.65	1984	30
38	T_Marital_Status	7.49	2409	37
39	T_Non_Inter_Med_Date	7.74	2142	33
40	T_Sec_Injury_Ind	8.39	1377	21
41	T_Litig_Antic_Ind	8.77	4989	76
42	T_Antic_Med_Mang	9.00	4207	64
43	T_Occ_Risk_Ind	9.02	4966	76
44	T_Ret_Work_Data	9.08	1659	25
45	T_Job_Class_Code	9.11	5111	78
46	T_Comp_Rate	9.14	5084	77
47	T_Surg_Antic_Ind	9.30	4899	75
48	T_ICMS_Assign_Date	10.04	1649	25
49	T_Ret_Work_Qual	10.44	1513	23
50	T_Prob_Perm_Inj	11.63	4656	71
51	T_DOD	11.94	380	6

| 52 | T_ref_Clsd_Med_Date | 17.91 | 443 | 7 |

Appendix D – NCCI NOI/POB Codes

NOI	Do Not Assign
1	no physical injury
3	angina pectoris
54	asphyxiation
30	freezing
31	hearing loss or impairment
32	heat prostration
36	infection
37	inflammation
53	syncope
55	vascular
58	vision loss
60	dust disease
61	asbestosis
62	black lung
63	byssinosis
64	silicosis
65	respiratory disorders
66	poisoning – chemicals
67	poisoning – metal
68	dermatitis
69	mental disorder
70	radiation
71	all other occupational disease
72	loss of hearing
73	contagious disease
76	VDT

NOI	Small 100% Assignment
7	concussion
13	crushing
22	enucleation
25	foreign body
42	poisoning
41	myocardial infarction
74	cancer
75	aids

77	mental stress
90	mult physical injuries
91	mult inj/phys&psych

NOI	Large Numbers	Recommendation	POB	
10	contusion	include	10	mult head inj
			11	skull
			12	brain
			20	mult neck inj
			21	vertebrae
			22	neck disc
			25	neck soft tissue
			30	multiple upper extremities
			38	shoulder
			42	lower back
			43	trunk disc
			53	knee
			63	lumbar & sacral vert
			91	body systems
40	laceration	include	11	skull
			13	ears
			20	mult neck inj
			26	trachea
			34	wrist
			38	shoulder
			90	mult body parts
			91	body systems
49	sprain	include	22	neck disc
			30	mult upper extemities
			31	upper arm
			38	shoulder
			39	wrist & hand
			40	mult trunk
			42	lower back
			43	trunk disc
			47	trunk spinal cord
			51	hip
			52	upper leg
			53	knee
			90	mult body parts
			91	body systems
52	strain	include	11	skull

5	21	vertebrae
	22	neck disc
	25	neck soft tissue
	30	mult upper extemities
	31	upper arm
	32	elbow
	33	lower arm
	34	wrist
	38	shoulder
10	39	wrist & hand
	41	upper back
	42	lower back
	43	trunk disc
	52	upper leg
15	53	knee
	63	lumbar&sacral vert
	90	mult body parts
59 all other spec. inj., NOC include	10	mult head inj
	12	brain
20	22	neck disc
	23	neck spinal cord
	38	shoulder
	39	wrist & hand
	41	upper back
25	42	lower back
	43	trunk disc
	50	mult lower extremities
	51	hip
	53	knee
	63	lumbar&sacral vert
30	90	mult body parts

	NOI	*Investigated by POB*	*Rec'dation*	*POB*	
	2	amputation	include all		
35	4	burn	include	40	multiple trunk
				50	multiple lower extremities
				52	upper leg
				61	abdomen incl groin
				90	multiple body parts
40	16	dislocation	incl. all but	36	finger
				37	thumb

				56	foot
				57	toes
				58	great toe
	19	electric shock	include	11	skull
5				35	hand
				90	mult body parts
				91	body systems
	28	fracture	incl. all but	16	teeth
				18	head soft tissue
10				35	hand
				36	finger
				37	thumb
				44	chest
				45	sacrum & coccyx
15				57	toes
				58	great toe
				62	buttocks
				64	artificial appliance
				34	hernia include
20				20	multiple neck injury
				21	vertebrae 22 neck disc
				42	lower back
				43	trunk disc
				61	abodomen Incl. Groin
25	43	puncture	include	13	ears
				14	eyes
				48	internal organs
				91	body systems
	46	rupture	incl. all but	36	finger
30				37	thumb
				54	lower leg
	47	severance	include all		
	78	carpal tunnel	include all		
	80	all other cumulative injury	include	20	mult neck inj
35				21	vertebrae
				22	neck disc
				30	mult upper extremities
				31	upper arm
				32	elbow
				34	wrist
40				38	shoulder

39	wrist & hand
40	multiple trunk
41	upper back
53	knee
56	foot
90	mult body parts

5

Appendix E – Sample List of Selected ICD-9 Codes

	ICD-9 Code	*ICD-9 Description*
10	308.3	acute stress react nec
	308.9	acute stress react nos
	309.81	prolong posttraum stress
	337	idiopath auto neuropathy
	337.2	reflex sympat dystrophy
15	337.2	reflex symp dystroph nos
	337.21	ref symp dyst upper limb
	337.22	ref symp dyst lower limb
	337.29	reflex symp dystroph nec
	353.1	lumbosacral plex lesion
20	353.2	cervical root lesion nec
	353.3	thoracic root lesion nec
	353.4	lumbsacral root les nec
	354	carpal tunnel syndrome
	354	mononeuritis upper limb
25	354.1	median nerve lesion nec
	354.2	ulnar nerve lesion
	354.3	radial nerve lesion
	354.4	causalgia of upper limb
	354.5	mononeuritis multiplex
30	354.8	mononeuritis arm nec
	354.9	mononeuritis arm nos
	550	inguinal hernia
	550	unilating hernia w gang
	550.1	unilating hernia w obst
35	550.12	bilating hernia w obst
	550.9	unilatinguinal hernia
	550.9	inguinal hernia nos
	550.92	bilatinguinal hernia
	553	other abdominal hernia
40	553	femoral hernia

28

	553	unilat femoral hernia
	553.02	bilateral femoral hernia
	553.1	umbilical hernia
	553.2	ventral hernia nos
5	553.2	ventral hernia
	553.21	incisional hernia
	553.29	ventral hernia nec
	553.3	diaphragmatic hernia
	553.8	hernia nec
10	553.9	hernia nos
	682.4	cellulitis of hand
	6826	cellulitis of leg
	682.7	cellulitis of foot
	6829	cellulitis nos
15	715	general osteoarthrosis
	715.15	loc prim osteoart-pelvis
	715.16	loc prim osteoart –l/leg
	715.91	osteoarthros nos-shlder
	715.92	osteoarthros nos-up/arm
20	715.93	osteoarthros nos-forearm

Appendix F – Medical Referral Notes

Med Referral Information:
The employee's SSN is _____

25 The employee is __ (Male/Female)   Date of Birth: __/__/____
Occupation: _____
Date of loss: __/__/____

This a surgical referral.   OR   This is a non-surgical referral.

30

Primary service requested: _____
Medical information: (followed by at least one of the following 5 lines)
Physical therapy is requested.
Chiropractic is requested.

35 Diagnostic tests are requested.
No medical requests.

Injury description: _____/_____
Cause: _____

40 Nature: _____

An IME has been performed.　　OR　　An IME has not been performed.

Current Treating physician: _____

5　Phone: (___)___-_____　Address: _____

Modified duty is available.　OR　　It is unknown whether modified duty is available.
OR　　Modified duty is not available.

10　**The employee is currently out of work since __/__/____**
OR　　They employee is currently working

SAC Text, if any.

15　**Med Referral Objective:**
Comments/Referral Objective:

_____

20　Appendix G – Manual ICMS Triage Process

Data	Source of Data	Timing/Availability
Work Status – if OOW or on modified duty: 　A. Actual lost time > 14 days 　B. Anticipated lost time > 14 days 　C. Modified duty > 14 days	T-MATE/Host	NOL Updated after initial claim contacts
SAC	Claim Reference Library	SAC language and SAC coding impacting ICMS referrals requires updating
Diagnosis	Claim notes only. Note: the nature of injury listed may be viewed as the diagnosis	ICD-9 not displayed in T-MATE. Diagnosis is found to frequently be missing (in notes) at initial stage. Dx confirmed at 1st medical bill.
ICMS Protocols – to determine disability duration	ICMS	Once diagnosis is known, protocols may

		be used to estimate disability period
IW's job category or description of physical demand category	Job Class code – T-MATE Job title – T-MATE/ICMS DOT/Job category – ICMS	Job Class – MIRA factor Title – NOL Job category (i.e., sedentary, light, etc.) derived from DOT code
Treating physician look for network status or specialty of MD	T-Mate – C&I screen, directory & notes ICMS – Med Ref	At NOL – often missing or inaccurate information available at triage

Red Flags present:
  A. Prior injury to same body part
  B. Age > 55
  C. Employee hospitalized
  D. Pre-existing condition
  E. Lay-off status/ seasonal worker
  F. Date of Hire
	T-MATE
	
	T-MATE
	Notes
	
	T-MATE
	T-MATE
	
	T-MATE
		MIRA factor
		
		MIRA
		
		MIRA
		
		MIRA

Compensability status	T-MATE	After ICU/RTW determination
Anticipated surgery	Notes/protocols	At MD contact
Expected or requested treatment (need for pre-cert/UR or watch Tx)	Notes/derived from protocols	At MD contact

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